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Characterisation and Ranking of the Homogeneity of Glasses

Martin Jensen[1]*, Long Zhang[2], Ralf Keding[1], Yuanzheng Yue[1]

[1]Section of Chemistry, Aalborg University, 9000 Aalborg, Denmark
[2]Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Science, 201800 Shanghai, China

The homogeneity of glass is a key parameter in glass technology as it controls a broad range of properties such as the mechanical and optical ones. Despite much progress in studying glass homogeneity, there is still a lack of methods that allow easy and fast quantification of the homogeneity of glass. Here we present a novel method based on image processing to characterise the striae content in various types of glasses covering industrial glasses such as container and window glass, to fluoride and oxyfluoride glasses produced at laboratory scale. The image processing method made it possible to quantify the striations in the glasses based on their size and optical intensity. The logarithmic ratio of these two characteristic parameters is used to rank the glasses according to their homogeneity. A comparison with refractive index measurements shows that the image processing method has a wider detection range and a lower statistical uncertainty. The new method has a high potential to be applied as a standard method for monitoring and controlling the quality of glass products for industry.